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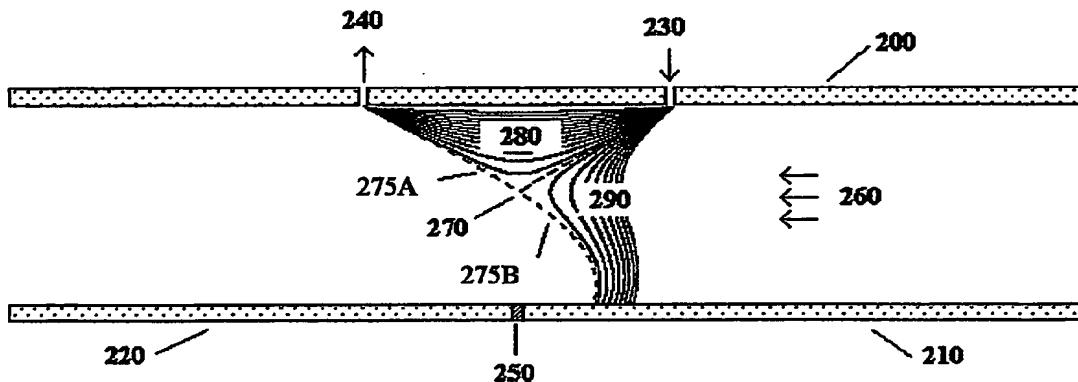
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(54) Title: ION MOBILITY SEPARATION DEVICES



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(57) Abstract: The invention describes a system and method to separate ions (and charged particles) suspended in gas based on their ion electrical mobility. Most common ion mobility analyzers involve two parallel plate (or concentric cylinder) elements (electrodes) between which is imposed an electrical field perpendicular to a sheath gas flow field between the cylinders. Separation occurs because high mobility ions tend to follow the electrical field while low mobility ions tend to follow the flow field. This invention describes various configurations of electrical elements and sheath gas flow fields for ion mobility separation devices with unique performance characteristics. These characteristics include devices in which: the ion inlet and outlet are on the same element; the inlet and outlet are at the same voltage; the outlet is upstream from the inlet; the outlet is on the axis; the inlet is on the axis; and the ions are focused on the outlet.